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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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EXAMINER

PM11/0410
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ART UNIT

PAPER NUMBER

3614

DATE MAILED:

04/10/98

The claims have been approved by the Commissioner.
This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

Claims 11, 16 and 27 are rejected under 35 U.S.C. §103, second paragraph, as being

OFFICE ACTION SUMMARY

- Responsive to communication(s) filed on _____
- This action is FINAL regarding the subject matter _____
- Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 D.C. 11453 (G.213). The interview _____

A shortened statutory period for response to this action is set to expire Three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- Claim(s) 1 - 29 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
 Claim(s) 17-23, 24, 25, 28, 31-34, 6, 39 is/are allowed.
 Claim(s) 1, 3, 4, 6-16, 23, 26, 27, 29, 30, 4, 35-38 is/are rejected.
 Claim(s) 2, 5 is/are objected to.
 Claims _____ are subject to restriction or election requirement.

Application Papers

- See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
 The drawing(s) filed on _____ is/are objected to by the Examiner.
 The proposed drawing correction, filed on _____ is/are approved disapproved .
 The specification is objected to by the Examiner.
 The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 All Some* None of the CERTIFIED copies of the priority documents have been
 received.
 received in Application No. (Series Code/Serial Number) _____
 received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received:

- Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

Notice of Reference Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

- SEE OFFICE ACTION ON THE FOLLOWING PAGES -

Art Unit: 3614

DETAILED ACTION

1. This application has been examined. Claims 1-39 are pending.
2. The prior art filed 1/27/97 has been considered.
3. The drawings have been approved by the draftsman.
4. Claims 23, 26, and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
 - A. As per claims 23, 26, and 27, "the common mode difference" lacks antecedence.
5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 4, 6-8, 10, 11, 13, 14, 16, 29, 30, and 35-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Mueller et al. (5,323,322; hereinafter Mueller).
 - A. As per claims 1, 14, 29, and 35, Mueller discloses in col. 9, lines 13-55 a system for determining the location of a mobile unit using GPS data and correction data from a plurality of reference GPS receivers. The mobile unit includes a GPS receiver for obtaining uncorrected location information and a second receiver for receiving a plurality of GPS correction data from reference stations with known location

Art Unit: 3614

coordinates. Various algorithms are used to "blend" the received reference data and to check the signals for linearity and failures. Further, Mueller discloses weighting the received correction data based on the distance between the mobile unit and each of the reference stations wherein the nearest reference station is given more weight.

B. As per claims 4, 6-8, 16, 30, 36 and 37, as noted and further using a least squares method on the received GPS correction data prior to "blending" the correction data based on weighted coefficients (col. 9, lines 13-55).

C. As per claims 10, 11, and 12, as above wherein the correction data may be transmitted to the mobile unit using FM subcarrier transmissions or satellite based transmissions (col. 45, lines 62-68).

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a

Art Unit: 3614

later invention was made in order for the examiner to consider the applicability of 35

U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 3, 9, 12, 15, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al. (5,323,322; hereinafter Mueller) in view of Gildea (5,523,761; hereinafter Gildea), King et al. (5,691,723; hereinafter King), and RTCM Recommended Standards For Differential NAVSTAR GPS Service (hereinafter RTCM).

A. Mueller discloses subject matter as set forth above. The claimed invention differs in that adjustments are made to the correction data for time bias and frequency bias (claims 3, 15, and 38) and that the second receiver may comprise different types such as telephone and minimum shift keying (claims 9 and 12).

B. At the time of applicant's invention it was known in the differential GPS art that the correction data transmitted by reference stations at different locations exhibited certain time and frequency errors. Mueller discloses using various weighting and least squares techniques to improve the accuracy of the final position calculation. These types of errors are discussed in the RTCM document (see for example page 4-1). One of ordinary skill in the art would have found it obvious to correct for these known errors prior to utilizing the correction data otherwise the final position calculation would have been inaccurate. With regards to the manner of transmitting the correction data to the mobile unit, the prior art suggests a variety of means including telephone networks and minimum shift keying (see King at col. 2, lines 5-17, Gildea at col. 4,

Art Unit: 3614

lines 12-21, and RTCM at page 3-11). One of ordinary skill in the art would have found it obvious to substitute one manner of transmitting the correction data for another wherein the environment, system availability, and costs would have been taken into consideration in selecting the appropriate transmission media.

10. As per claims 2, 5, 22-28, and 31-34, the prior art of record does not disclose or reasonably suggest, in combination with the other claimed subject matter, substituting portions of a first measurement correction data with corresponding portions of second measurement correction data if errors are detected in the first measurement correction data.

11. As per claims 17-21 and 39, the prior art of record does not disclose or reasonably suggest, in combination with the other claimed subject matter, computing a common mode difference between two transmitted measurement correction data and determining an error in transmission when the common mode difference varies significantly.

12. Claims 2 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 23, 26, and 27 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112 set forth in this Office action.

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Enge et al. (5,621,646) discloses a differential GPS system with multiple reference transmitters.

Art Unit: 3614

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Michael Zanelli** whose telephone number is **(703) 305-9756**.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is **(703) 308-1113**.

/mjz

April 7, 1998

michael zanelli
MICHAEL ZANELLI
PRIMARY EXAMINER